of the present may be lived in accordance with "ideal ends." God and the future are brought in as the norms to which life has to conform.

This portion of the book is a brilliant piece of work, and the author has brought to bear upon it not only great learning, but also a lightness of touch which really borders on something like originality. In the hands of men such as Prof. Jastrow, the Bible can again become a work of immense significance.

The next part of the book presents us with the words of Koheleth in their original form, stripped of later interpolations, sayings, and comments. The translation of Koheleth is excellent, and in reading it we seem to be brought face to face with a book published yesterday, because it looks upon the world of Nature and of life from a point of view which cannot be neglected. Of course, such aspects do not exclude others, but it is always well to make the best use of each point of view, and not to try to form a composite so vague that no meaning can be extracted from it. No doubt Prof. Jastrow had something like this in mind when he undertook the preparation of this volume, and we sincerely hope he will deal with other composite books of the Old Testament as he has done so splendidly with the Book of Koheleth.

New Books on Industrial Chemistry.

(1) *Applied Chemistry: A Practical Handbook for Students of Household Science and Public Health.* By Dr. C. Kenneth Tinkler and Helen Masters. Vol. i., *Water, Detergents, Textiles, Fuels, etc.* Pp. xii + 292. (London: Crosby Lockwood and Son, 1920.) Price 12*s.* 6*d.* net.

(2) *Chemistry from the Industrial Standpoint.* By P. C. L. Thorne. (New Teaching Series.) Pp. xvi + 244. (London: Hodder and Stoughton, 1919.) Price 4*s.* 6*d.* net.

(3) *Fuel, Water, and Gas Analysis for Steam Users.* By John B. C. Kershaw. Second edition, revised and enlarged. Pp. xii + 201. (London: Constable and Co., Ltd., 1919.) Price 12*s.* 6*d.* net.

(4) *Popular Chemical Dictionary.* By C. T. Kingzett. Pp. vi + 368. (London: Baillière, Tindall, and Cox, 1920.) Price 15*s.* net.

(1) THIS work is mainly intended for students in their third year who are preparing for diplomas in household and social science, and for diplomas and degrees in public health of the various universities. There is no work known to the reviewer that covers the ground in the same manner as this. The book is clearly and attractively written, and forms a most useful addition, not only to the academic student, but also to the works chemist, who must often adjudicate upon matters such as are dealt with in this work.

The book does not deal with manufacturing operations, but gives a clear and practical exposition (with the necessary theoretical explanations) of the methods employed in analysing and appraising the value of water, water softening processes, soap, textile fibres, bleaching agents, dry cleaning, air analysis, gaseous fuels, liquid and solid fuels, materials used in the protection of wood, metallic and other surfaces, etc. Although the authors themselves make no claim to originality, many of the subjects are treated in a manner very different from that prevailing in most of the existing works on the subject. Every technical chemist should possess a copy of this work for reference, as there is collected together here in one volume a large mass of material which is usually scattered piecemeal throughout a number of expensive treatises. Altogether this is a book to be thoroughly recommended, and it should command a wide sale.

(2) Mr. Thorne has written an interesting little book on a very large subject, which is clearly and attractively explained, and the volume marks a considerable departure from the older style of text-book. Not very long ago a book of this type would have enjoyed no sale, but would have been coldly received in scientific circles, and the advent of such a work shows what a revolution has been wrought in the chemical world within the last few years. The reviewer cannot help thinking, however, that Dr. Briscoe's excellent introduction is somewhat hard upon the business man. His own experience is that the business world is very much alive to scientific possibilities, whereas the purely professional university-trained chemist of the past was not only largely unpractical, but also held himself aloof from the problems of the business man, and the latter's caution was founded in many cases upon heavy losses attained by contact with the semi-scientific "expert," who regards the business man as his natural prey.

For the earnest technical student or the trained works chemist the book naturally is not of great use, as it cannot go into exact detail. For a young chemist, however, entering works for the first time, it gives an excellent summary of the main operations involved in chemical industry, and is well up-to-date as regards modern develop-

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ments, as witness the references to rotary filters, catalytic action, hydrogenation of fats, etc.

The ordinary business man engaged in dealing with the products of chemical industry will undoubtedly derive considerable benefit from the perusal of this volume. The style is clear enough to be intelligible even to the non-technical reader.

(3) Fuel and water are such important subjects industrially that any book dealing with them is bound to receive serious attention from every works chemist and steam user. The present work (now in its second edition) meets a well-defined want in that it gives trustworthy and up-to-date technical methods of analysing fuel, water, and gas.

Part i. deals with fuel, fuel sampling, analysis of fuel, thermal values of fuel, etc., and is excellent. Part ii. deals with water as applied to technical purposes; methods of sampling and analysing it, of softening, and of calculating the amount of softening materials to be added, are given in full. Here, in a concise form, are the materials upon which a practical opinion can be formed as to the best methods of dealing with any given type of water. The subject of part iii. is waste gases, their sampling, analysis, and valuation.

The work is written by an authority who is in practical touch with the numerous and difficult problems relating to fuel and water which every works chemist has to handle. It can be recommended to every industrial chemist.

(4) The author has achieved his aim of producing a "popular" dictionary of chemistry, and the work, so far as it goes, is very complete, almost every well-known chemical or piece of chemical apparatus being briefly mentioned. It is very difficult to see, however, for what class of reader such a work is intended. For purposes of strict reference the volume is far too "popular." For example, on looking up the word "pyridine," we are informed that it is "a nitrogenous base present in bone oil, and in tar obtained from shale and coal." No mention is made of its boiling point, specific gravity, constitutional formula, solubilities, etc., which the average reader would require. This is typical of the work. In the reviewer's experience, no one looks up chemical terms for amusement. Definite *quantitative* information is what the user of a dictionary requires in ninety-nine cases out of a hundred, and it is these quantitative data which are so conspicuously lacking in the present volume. The constants of most of the materials should have been given in a work of this kind. G. M.

Our Bookshelf.

The Theory of Heat. By Prof. Thomas Preston. Third edition. Edited by J. Rogerson Cotter. Pp. xix + 840. (Macmillan and Co., Ltd., 1919.) Price 25*s.* net.

It is pleasant to meet an old friend still going strong in spite of years and changing fashions. In these days of rapid progress a quarter of a century is a long period in the life of a book dealing with a living science. The secret of the continued popularity of Preston's work is no doubt to be found in the fact that the book was written as a labour of love in the interests of true scientific education, instead of being merely compiled to suit an arbitrary standard or syllabus, adapted to a particular type of student, or a special limit of mathematical attainment. The object has been to give a comprehensive survey of the development of the theory of heat from an historical point of view, which possesses many advantages in the exposition of a scientific subject.

The historical order of evolution, both in theory and in experiment, generally follows the natural processes of reasoning of the human mind, and introduces fresh ideas in a regular sequence in which they are readily assimilated. The deductive method, starting with a general law or formula, may frequently provide a more direct means of arriving at any particular result or practical application, but it tends to obscure the essential foundation on experiment, and to rob the subject of human interest. From the point of view of the general reader, as distinguished from the special student, there can be no comparison between the two methods. There is an illusion of finality in the deductive method which appeals to the mathematical mind, but the historical method, when illustrated, as in Preston, by a critical discussion of typical experiments, is the more suggestive, inspiring the student to think for himself and to make further advances.

The book is so well known that it only remains to add that Mr. Cotter has shown himself to be a most sympathetic and capable editor in both pruning and grafting. The important additions, on recent advances in the theory of radiation and specific heat, and on the kinetic theory of gases, are admirable summaries, conceived and carried out in the spirit of the original. H. L. C.

Royal Botanic Gardens, Kew: Bulletin of Miscellaneous Information, 1919. Pp. iv + 459 + 39. (London: H.M.S.O., 1919.) Price 4*s.* 6*d.* net.

This volume contains the ten numbers of the *Kew Bulletin* which were published at intervals from April to December, 1919. The thirty-three articles include papers and miscellaneous notes of both economic and strictly botanical interest. Mr. J. H. Holland contributes a useful list of food and fodder plants arranged under their respective families, with notes on their origin, uses, popular names, etc. There are also papers

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